EPE

Filters . Accumulators

Welded Diaphragm Accumulators Type-AMW

Definition and Operation

A hydro-pneumatic accumulator is a device used specifically for storage of liquid under pressure. As liquids, for all practical purposes, are incompressible, this objective is achieved by utilizing the compressibility of gases.

A flexible rubber separator i.e., diaphragm is fitted into the accumulator shell.
An inert gas - nitrogen - is filled into the diaphragm through a pressure valve to a pressure Po. The diaphragm expands, filling the entire volume Vo of the accumulator shell.
When the system (circuit) pressure P1 is higher than the gas precharge pressure Po, the liquid enters the shell and the diaphragm is compressed reducing the gas volume to V1.
Should the liquid pressure rise to P2, the volume of gas reduces to V2 with an attendant rise in pressure, thus balancing the Liquid pressure.

A potential energy is now created in the accumulator to be utilised whenever needed.

Construction

The accumulator, designed & manufactured according to directive 97/23/EC, consists of a pressure vessel on which the gas connection is located at the top part, while the fluid connection is in the lower part.
The body contains a flexible rubber diaphragm separating hydraulic fluid and nitrogen. The diaphragm incorporates a button (in carbon steel, in stainless steel or in polymer), bonded to the lower part which prevents its extrusion through the hole of the liquid port.
These Accumulators have the body in welded steel and therefore the diaphragm is not replaceable.

Gas Charging : Done with help of Pre-loading and Checking Set type-PCM.

Technical Features

Design	:	Welded Shell, Non-repairable
Max.working pressure	:	40-350 Bar.
Test Pressure	:	1.43 times Max.working pressure
Temperature range	:	-10^{0}C to $+80^{0}$C
Allowable pre.Ratio (P2/P0):		8:1 (4:1 for AMW -2.8)
Nomianl Capacity	:	0.075 to 5 Ltrs.
Material of Construction		
Body	:	Carbon Steel-Painted or Stainless Steel
Diaphragm	:	Nitrile(NBR) or Epichlorohydrin(ECO) or Butyl (IIR) or Viton (FKM). Others on request.
Connections-Gas Side	:	M28x1,5 (M) or Dia 8 or 5/16" UNEF/Vg8. Others on request.
Fluid Side	:	Female Threaded or Combination Thread (Male + Female) or with SAE Ports. Others on request.

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Note : Technical specifications are subject to change.

LP Accumulators (Upto 250 Bar Pressure)

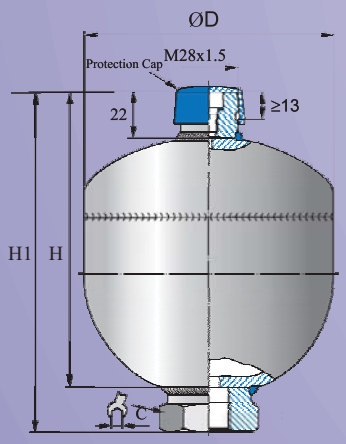


Figure A

HP Accumulators (Above 250 Bar Pressure)

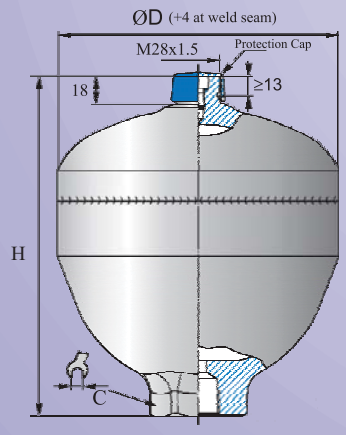
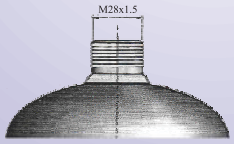
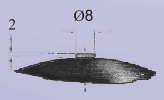


Figure B

Gas Side Connections



Version M (Standard)



Version P (Special)

Only For
Capacity - Upto 1.4 Ltrs.
Pressure - Upto 250 bar

Dimensions

Model	AMW-0.07	AMW-0.16	AMW-0.32	AMW-0.5	AMW-0.5	AMW-0.75	AMW-0.75	AMW-0.75
Capacity (ltrs)	0.075	0.16	0.32	0.5	0.5	0.75	0.75	0.75
MWP (bar)	250	250	210	160	210	140	210	250
Height H (mm)	91	99.5	118	127	129.5	138	140	144
Height H1 (mm)	111	119.5	138	149	151.5	160	162	166
Diameter D (mm)	Ø64	Ø75	Ø92.5	Ø103	Ø105	Ø115.5	Ø118	Ø121
Weight (kgs)	0.76	0.95	1.42	1.75	2.00	2.22	2.50	3.30
Standard Conn.	C1	C1	C1	C2	C2	C2	C2	C2

Model	AMW-1	AMW-1.4	AMW-1.4	AMW-2	AMW-2.8	AMW-3.5	AMW-5
Capacity (ltrs)	1.0	1.4	1.4	2.0	2.8	3.5	5.0
MWP (bar)	250	210	250	210	210	250	250
Height H (mm)	158	176	180	229	247	278	361.5
Height H1 (mm)	180	199	202	251.5	269	300	383.5
Diameter D (mm)	Ø136	Ø155	Ø157	Ø155	Ø166.5	Ø174	Ø174
Weight (kgs)	4.20	5.20	6.34	6.68	7.88	11.54	15.56
Standard Conn.	C2	C2	C2	C3	C3	C3	C3

Checking & Charging

Pre-Loading & Checking Set type-PCM (refer Image on page 3) is to be used for checking / charging of welded Diaphragm Accumulators. When charging, the nitrogen bottles must be capable of delivering pressure higher than the desired accumulator gas pressure. Use dry industrial nitrogen. **NEVER USE OXYGEN OR AIR.**

Proceed as follows: (Refer image on page 3)

* Fit the suitable pre-charging equipment to the gas valve;
* Connect it to the nitrogen cylinder with the charging hose;
* Slowly introduce nitrogen into the accumulator until reaching a pressure slightly above the required level;
* Close the valve of nitrogen cylinder and disconnect the charging hose from the equipment;
* Wait for the gas temperature stabilization;
* Set the pressure by venting off the excess of gas.
* Tighten the Charging Valve to 20^{+5}Nm using torque wrench.

A PRESSURE REDUCING VALVE MUST BE INSTALLED BETWEEN THE NITROGEN GAS CYLINDER AND THE ACCUMULATOR WHEN THE GAS CYLINDER PRESSURE IS HIGHER THAN MAX PERMISSIBLE PRESSURE OF ACCUMULATOR.

Liquid Side Connections

LP Accumulators (Upto 250 Bar Pressure)

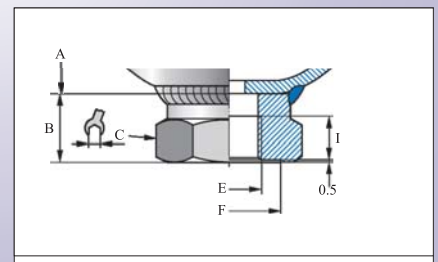


Figure 1 (Type C)

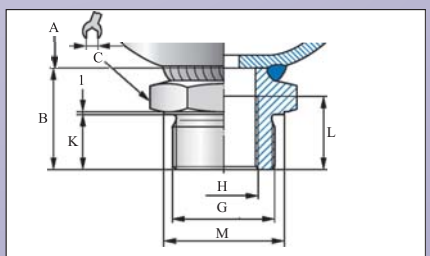


Figure 2 (Type E)

HP Accumulators (Above 250 Bar Pressure)

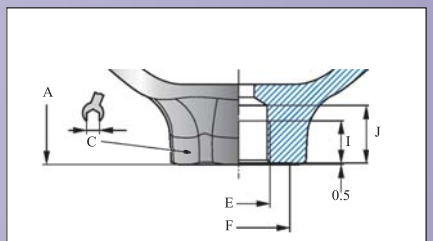


Figure 3 (Type C)

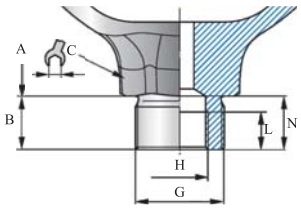


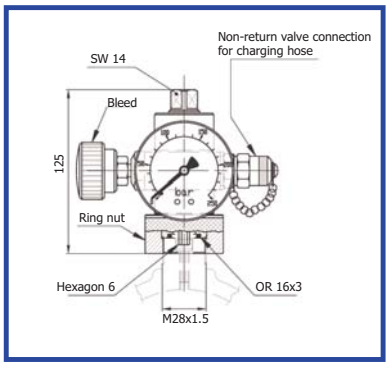
Figure 4 (Type E)

Liquid Side Connection Dimensions

Fig	Type	Thread Code	Thread	B	C (A/F)	E	F	G	H	I	J	K	L	M	N
1	C	C1	G ½" (F)	20	32	G ½	Ø29	–	–	14	–	–	–	–	–
		C2	G ½" (F)	22	41	G ½	Ø34	–	–	14	–	–	–	–	–
		C3	G ¾" (F)	–	41	G ¾	Ø34	–	–	–	–	–	–	–	–
2	E	E1	M14x1.5(M)	21.5	19	–	–	M14x1.5	Ø5	–	–	12	–	–	–
		E2	G1"xG½"	33	41	–	–	G1	G ½	–	–	18	14	Ø39	–
		E3	M33xG ½"	33	41	–	–	M33x1.5	G ½	–	–	18	24	Ø39	–
		E4	M42xG ¾"	44	55	–	–	M42x1.5	G ¾	–	–	25	26	–	–
		E5	M32xM22	33	41	–	–	M32x1.5	M22x1.5	–	–	–	24	–	–
		E6	M33xM22	33	41	–	–	M33x1.5	M22x1.5	–	–	18	24	Ø39	–
3	C	C4	G ½" (F)	–	41	G ½	Ø34	–	–	14	20	–	–	–	–
		C5	G ¾" (F)	–	46	G ¾	Ø34	–	–	16	23.5	–	–	–	–
4	E	E7	M33xG ½"	20	41	–	–	M33x1.5	G ½	–	–	–	14	–	20
		E8	M45xG ¾"	20	55	–	–	M45x1.5	G ¾	–	–	–	16	–	25.5

All dimensions are in mm

Pre-Loading & Checking Set, Type-PCM



Installation

Kit

General

The accumulators should be properly fitted / clamped on the system. Clamping should not cause the shell or the accumulator connection to be stressed due to over tightening. It is necessary, especially with larger capacities / lengths, horizontal mounting or with heavy units, to use fasteners (clamps, brackets etc) that support the accumulator and prevent dangerous vibrations.

To achieve a high degree of efficiency, the accumulator should be fitted as close as possible to the installation it serves. The space necessary for charging & gauging kit is atleast 150mm above the gas fill valve.

Position

It is suggested that the accumulators are installed vertically with gas side on top. The manufacturers name plate stating the initial pressure must be visible. Moreover access to the vent screw, if any, must be kept unobstructed.

The mounting must be such that, should a rupture occur on the pipe system at the liquid connection, or should the gas fill valve break, the accumulator cannot be pulled from its mounting by the forces involved. No welding or other mechanical process must be carried out on the accumulator shell for the purpose of attaching fasteners.

Clamps

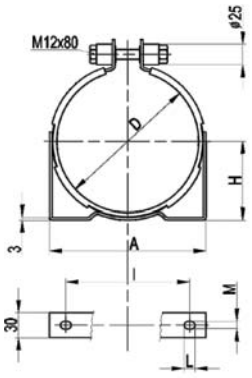


Fig.1

U-Bolt Clamps

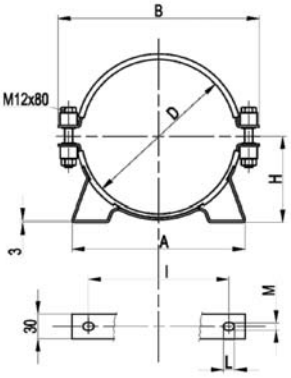


Fig.2

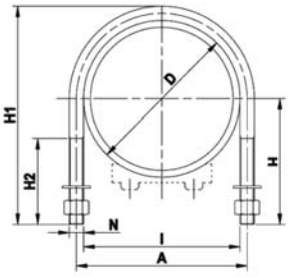


Fig.3

Plastic Pipe Saddles

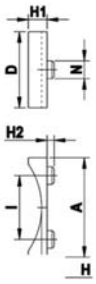


Fig.4

Dimensions & Order codes

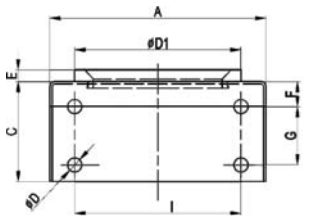
Order Code	Fig.	Weight (kgs)	A	B	D	H	I	L	M
10155	1	0.65	125	–	89-93	53-55	90	13	9
10157	2	0.85	135	194	114-122	66-70	100	13	9
10250	2	1.1	185	251	167-176	95-100	146	13	9
10410	2	1.35	256	298	215-227	120-126	216	20	10

All dimensions are in mm

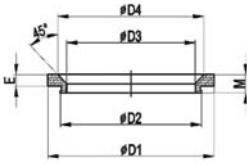
Order Code	Fig.	Weight (kgs)	A	D	H	H1	H2	I	N
11468	3	0.12	123	115	84	149	35	115	M8
11475	4	–	75	70	8	17	10	40	15
11469	3	1.74	178	168	118	211	45	168	M10
11476	4	–	140	75	8	26	10	90	25
11470	3	2.75	236	220	157	282	60	220	M16
11477	4	–	140	75	8	26	10	90	25

All dimensions are in mm

Bracket with Ring



Support Ring



Dimensions & Order codes

Order Code		Weight (kgs)	A	B	C	ØD	ØD1	ØD2	ØD3	ØD4	E	F	G	H	I	L	M
Bracket with ring	Support Ring																
10263	–	1.5	200	175	90	11	140	120	90	–	10	30	40	96	140	3	–
10363	–	3.6	260	232	120	17	200	170	150	–	15	30	70	125	200	4	–
–	10266	0.13	–	–	–	–	140	120	90	112	10	–	–	–	–	–	18
–	10345	0.22	–	–	–	–	200	170	150	175	15	–	–	–	–	–	23

All dimensions are in mm

Identification Code

1	2	3	4	5	6	7	8
AMW	**0.75**	**P**	**210**	**C**	**C2**	**0**	**M**

1 Accumulator Type

AMW Diaphragm Accumulator - Welded design

2 Nominal Capacity (ltrs)

0.075	**1.40**
0.16	**2.00**
0.32	**2.80**
0.50	**3.50**
0.75	**4.00**
1.00	**5.00**

3 Diaphragm Material

P Nitrile (NBR)
Y Epichlorohydrin (ECO)
B Butyl (IIR)
V Viton (FKM)
- Others on request)

4 Max. Working Pressure (Bar)

40	**210**
100	**250**
140	**350**
160	

5 Body Material

C Carbon Steel - Painted
X Stainless Steel

8 Gas Side Connection

M M28x1.5(M) - Standard
P Ø8 - Special (Non-rechargeable type)
V 5/16" UNEF/Vg8
S.. Special (.. to specify)

7 Test Certification

0 Factory Testing
8 CE/PED
- Others (on request)

6 Fluid Side Connection

C.. Female Thread
E.. Combination Thread (Male + Female)
S.. SAE Connection

For upto 250 Bar.
C1 G1/2" (F) with Ø29
C2 G1/2" (F) with Ø34
C3 G3/4" (F)
C6 M18x1.5(F)
E1 M14x1.5(M) with Ø5 hole
E2 G1" (M) x G1/2" (F)
E3 M33x1.5(M) x G1/2" (F)
E4 M42x1.5(M) x G3/4" (F)
E5 M32x1.5 (M) x M22x1.5(F)
E6 M33x1.5 (M) x M22x1.5(F)
E9 M45x1.5(M) x G3/4" (F)
S1-S8 SAE Port (specify size)

For above 250 Bar
— refer Page 3

Dimensions on page 3

EPE

Filters . Accumulators

Other Products of Interest

Bladder type Accumulators
Type-AS

Charging Kit
Type-PCM

Piston type Accumulators
Type-AP

Safety cum Shut-Off Blocks
Type-B/BS

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